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Vol. iii. 66, is the most satisfactory disposition of it, and that the varieties named by Dr. Engelmann in the fifth edition of Gray's Manual are better regarded as forms.

N. L. BRITTON.

On Buxbaumia indusiata, Bridel.

In a small collection of mosses lately sent from the new State of Washington by Mr. Charles V. Piper, there were a few small specimens of *Buxbaumia*, which were found growing on wet logs at Seattle in June, 1889. The plants were still attached to bits of the log, and were surrounded with *Tetraphis pellucida*, a *Hypnum* and five species of Hepaticæ.* The wood of the log is reddish-brown in color, and is plainly coniferous; it may be *Thuya gigantea*. The plants of *Buxbaumia* are rather over-mature, and have lost their opercula, and the outer peristome is pretty much gone also. The capsules are irregular in shape, but on the average more ovate-cylindrical than those of *B. aphylla*, and are paler in color. Recognizing them as probably *Buxbaumia indusiata*, it became desirable to prove them to be this species, the existence of which in the western hemisphere had never to my knowledge been announced or even suspected.

I could not obtain a satisfactory peristome, and though the habitat, on wet decaying logs, the shape of the capsules and the color were all that one should look for in *B. indusiata*, something more was wanting. Noticing that Schimper says that the spores of *B. indusiata* are thrice the diameter of those of *B. aphylla*, I compared the spores of the Washington plant with those of *B. aphylla* from Connecticut, and found them about two and a half times larger, and all doubt of the reality of Mr. Piper's most interesting discovery vanished.

Mrs. Britton, on learning of this discovery, most kindly shared with me a few plants of a *Buxbaumia* collected March 23, 1889, by Mr. J. B. Leiberg on decaying logs in Kootenai County, Idaho, and these also proved to be *B. indusiata*, one or two of them

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*Prof. Underwood has kindly identified these Hepaticæ; *Aneura palmata* is the most abundant species; the others are *Cephalozia multiflora*, *C. bicuspidata*, *Jungermannia incisa* and *Blepharostoma trichophyllum*. The *Hypnum* is apparently a young plant of *Plagiothecium undulatum*.

showing the characteristic conical operculum, and the spores also being large. The same lady then sent me for examination all the *Buxbaumias* in the Columbia College Herbarium, and among them, to my delight, I found three plants of unmistakable *B. indusiata* collected in October, 1869, by Professor C. H. Peck, "on rotten logs in a swamp, Catskill Mts." These plants have the conical opercula in perfect condition, but the spores are not quite mature, and run a little smaller than in the Washington specimens. Professor Peck writes me that the station must be "in the immediate vicinity of Haines' Falls, probably in the swampy lowland between Haines' Falls and Tannersville." Examination of the spores of both species, both American and European, shows some variation in size; but the average diameter of the spores of *B. indusiata* is from twice to twice and a half that of those of *B. aphylla.*

It may perhaps be questioned whether the moss collected by Lyall in the Cascade Mountains, and referred to *B. aphylla* in the Flora of California, be not the rarer species; but the specimens are not now in America. Leaving them out, I find no evidence that *B. aphylla* has been found west of Ohio. The most evident differences between the two species may be set side by side in the following manner:

B. aphylla.	*B. indusiata.*
Capsule shining, reddish, obliquely ovate, much flattened on the upper side, the external cuticle firm and persistent.	Capsule dull, pale, sub-erect, ovate-oblong, more tapering, but slightly flattened, the external cuticle at length ruptured along the flattish side and revolute.
Operculum thimble-shaped.	Operculum conical.
Outer peristome simple.	Outer peristome triple or quadruple.
Spores small (5-8μ).	Spores about twice or twice and a half the size of those of *B. aphylla* (10-16μ).
Habitat; on earth.	Habitat; on decayed logs.

Now that *B. indusiata* is known to be American as well as European, all moss lovers will be on the lookout for it, and I doubt not that it will be found on decaying coniferous logs all the way from New England to the Pacific. I will gladly receive and examine any specimens that may be sent me.

New Haven, March 22, 1890. DANIEL C. EATON.